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January 7, 2016
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Re: DEQ Review "Revised Off-Property Screening Level Human Health Risk Evaluation Former Rhone-Poulenc Portland Site"

Rhône-Poulenc Site –Portland Site

ECSI 155

Dear Mr. Dearden:

The Department of Environmental Quality (DEQ) has completed our review of the November 2015 *Revised Off-Property Screening Level Human Health Risk Evaluation - Rhône-Poulenc Site - Portland Site* (Revised Off-Property HHRA), prepared for StarLink Logistics Inc. (StarLink) by Golder Associates (Golder). Thank you for that submittal.

DEQ previously commented on the October 7, 2013 draft HHRA in a letter dated August 25, 2015. Based on our review of the Revised Off-Property HHRA, DEQ notes the following significant deficiencies: 1) the adequacy of the off property dataset has not been addressed, and 2) chemicals of concern (COCs) to be carried forward into the feasibility study (FS) need to be explicitly identified. DEQ's review of the Revised Off-Property HHRA and directed modifications are provided below. Please revise and resubmit a final Off-Property HHRA to DEQ within 30 days.

October 7, 2013 DEQ Comments. The following draft HHRA comments must be fully addressed in the final Off-Property HHRA.

1. **General Comment: "…***For both off-property soil and groundwater, the submittal does not adequately address whether the data evaluated is representative of site conditions that could contribute to risk. For example, limited sampling was conducted in surface soil surrounding the southeast and southwest property boundary. Also limited subsurface samples were collected in the former Doane Lake area where sediment may potentially be present at depths less than 15 feet from ground surface. A data completeness evaluation must be included as part of the revised report to address this issue."*

   See comments 5, 8, 22, 23, 26, and 31 below for DEQ directed modifications.

2. **General Comment:** *"…In addition, the revised submittal must clearly identify all COCs for each pathway that will be carried into the FS."*

   See comments 2, 7, 27, and 28 below for DEQ directed modifications.

3. **Specific Comment 2.** "*The submittal must clearly explain how the screening assessment integrates with the risk evaluations for the on-property area of the Site. It must clearly identify what portion of the Site is being addressed and what portion is not. The LOF as presented by*

DEQ in the Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report[1] must be addressed, and a discussion of areas that are excluded from evaluation should be presented. For example, the groundwater to surface water pathway is not discussed in the off-property screening because the pathway is being addressed through a separate source control evaluation process. Areas excluded from this assessment within the LOF (such as North Doane Lake, the historical drainage ditch, and the off-property surface soil to the southeast and southwest property boundary) must be documented with an explanation of how and when they will be addressed."

See comments 4, 10, and 24 below for DEQ directed modifications.

4. **Specific Comment 4.** "*…The revised assessment must address direct contact of former Doane Lake sediment to excavation and construction workers via established exposure scenarios. Because there is limited data in the identified areas, StarLink must screen representative data from former Doane Lake sediment. DEQ has determined that the samples collected from the East Doane Lake portion of the lake and the soil sample collected from RP-26 at 35 to 37 feet bgs are most representative of the Schnitizer/Air Liquide property, City Pump Station area, and former shoreline along Northwest Front Avenue. Conclusions based on this data will need to be confirmed as part of the FS by collecting verification samples in the area of the City Pump Station, Northwest Front Avenue, and Schnitzer/Air Liquide property.*

   Table 1 presents an initial screening of this data. Results from this screening indicate 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 2,3,7,8-TCDF, arsenic, lead and total PCBs exceed their respective screening level value and must be carried forward into the FS as COCs.

   StarLink must confirm this screening and present it in the revised assessment."

   See comments 1, 6, 8, 24, and 25 below for DEQ directed modifications.

5. **Specific Comment 14.** *"COIs exceeding screening levels must be identified as COCs to be carried into the FS. COCs are not identified in the report."*

   See comments 2, 7, 27, and 28 below for DEQ directed modifications.

6. **Specific Comment 15.** *"Conclusions must summarize all COCs for all receptor/pathways, and clearly state that they will be carried into the FS."*

   See comment 28 below for DEQ directed modifications.

7. **Specific Comments 17, 19, and 20.** The assessment must present the rationale for monitoring well selection, and confirm that all wells located outside the property boundaries and within the location of the facility (LOF) are included.

   See comments 10, and 30 below for DEQ directed modifications.

Revised Off-Property HHRA Specific Comments and Directed Modifications

1. **Response to Specific Comment 4.** Golder states that "This was addressed by using soil data from soils removed as part of the Gould remedy at boring RP-26." DEQ notes that the Gould remedy did not address this portion of the Site and did not result in the removal of soil in the vicinity of RP-26. The final Off-Property HHRA must accurately describe the Gould remedy when referenced. DEQ can offer additional information or resources if necessary.

[1] (DEQ 2015). *Rhone-Poulenc Remedial Investigation Report: Addendum-RI/SCE Report (November 19, 2010)*. Oregon Department Of Environmental Quality. April 2015.

2. **Page 1, Section 1.0 Introduction.** The stated objective is not consistent with DEQ's previous comments to the Off-Property HHRA or DEQ guidance. Contaminants of interest (COIs) that fail screening and are determined to be representative of site conditions must be carried into the FS as COCs. The objective must be revised in the final Off-Property HHRA to include identification of all COCs for all receptor/pathways that will be carried into the FS.

3. **Page 1, Section 1.0 Introduction.** The revised assessment states that "Site-specific RBCs" were calculated. It appears that this term is applied to (risk based concentrations) RBCs that were calculated using the default exposure assumptions from DEQ RBC guidance for COIs that were not presented in DEQ RBC guidance summary tables. Also, it does not appear that site-specific exposure adjustments were used in calculating any of the RBCs. DEQ considers the term "site specific RBC" to mean that adjustments were made to the default RBC exposure scenarios. Please revise the final Off-Property HHRA accordingly.

4. **Page 2, Section 1.0 Introduction.** The revised assessment does not discuss the groundwater pathways to surface water receptors. The final Off-Property HHRA must clearly explain how and when contaminated groundwater discharge to North Doane Lake (NDL) and the Willamette River will be addressed.

5. **Page 5, Section 2.3 Surface Soil.** The surface soil evaluation was not completed in accordance with DEQ guidance. Current and future occupational worker direct exposure to surface soil must be added to the list of potential receptors, and soil results must be screened against occupational worker RBCss values. If there is not sufficient data to evaluate this pathway then it should be noted as a data gap.

6. **Page 5, Section 2.4 Former Doane Lake Sediments.** The evaluation of the former Doane Lake sediment only screened data from RP-26. DEQ determined that the samples collected from the East Doane Lake portion of the lake and the soil sample collected from RP-26 at 35 to 37 feet below ground surface (bgs) are the most representative of the Schnitizer/Air Liquide property, City Pump Station, and former shoreline along Northwest Front Avenue. The final Off-Property HHRA must include the former East Doane Lake data. The May 22, 2014 memo *Initial Evaluation of Former Doane Lake Sediment* presents a summary of available former Doane Lake data.

7. **Page 7, Section 4 Identification and Evaluation of Constituents of Interest.** The intended outcome of the screening presented in this section is unclear. The screening must clearly identify what COCs/pathway combinations are being carried forward in the FS.

8. **Page 7, Section 3 Data, Sources and Use.** A data completeness evaluation was not included as requested. The revised assessment does not adequately address whether the data evaluated for both off-property soil and groundwater is representative of site conditions that could contribute to risk. For example, limited sampling was conducted in surface soil surrounding the southeast and southwest property boundary. Also, limited subsurface samples were collected in the former Doane Lake area where sediment may potentially be present at depths less than 15 feet from ground surface. The final Off-Property HHRA must include a data completeness evaluation, and any data gaps must be identified and carried into the FS.

9. **Page 7, Section 3 Data Sources and Use.** Please confirm that all EMPC flagged data was included in the data set regardless as to whether or not the laboratory reported the result as a non-detect. DEQ's 2010 HHRA guidance (Section 2.6) states that estimated data (J- and EMPC-qualified data) should be used in the risk assessment. The final Off-Property HHRA must present and screen all EMPC flagged data.

10. **Page 7, Section 3.1 Groundwater (Data Sources and Use).** DEQ requested that StarLink confirm the wells identified by DEQ include all monitoring wells within the LOF and within the Rhone-Poulenc monitoring well network (i.e. monitoring wells sampled as part of the Rhone-Poulenc Site investigation). The revised assessment stated that the wells identified by DEQ were added to the evaluation but did not confirm that all the appropriate wells were identified. StarLink must confirm that the wells identified by DEQ include all monitoring wells within the LOF and within the Rhone-Poulenc monitoring well network in the final Off-Property HHRA.

11. **Page 10, Section 4.0 Identification and Evaluation of Constituents of Interest**. DEQ notes that StarLink chose to use tap water RBCs as conservative screening levels for occupational exposure. However, the absence of dermal route in the development of RBCs may mean that the screening values are not sufficiently protective. EPA regional screening levels (that include three routes of exposure: ingestion, inhalation, and dermal), and could have been used to develop more appropriate screening levels (inhalation and dermal) for the assumed occupational exposure.

    In December 2015, DEQ added the water dermal route for the calculation of RBCtw. Although not as straightforward as EPA's approach, RBCtw can be modified on a site-specific basis to remove the ingestion route and consider only inhalation and dermal exposure. DEQ checked several chemicals to confirm that refinement of the RBCs resulted in substantial changes. For heptachlor epoxide, the 2012 occupational RBCtw was 0.045 ug/L, the 2015 RBCtw (with dermal) is 0.0053 ug/L, and the 2015 RBCtw modified to remove ingestion is 0.0059 ug/L. The maximum deep groundwater concentration of 0.44 ug/L is greater than all of these values, although the magnitude of exceedance increases.

    For pentachlorophenol, the 2012 occupational RBCtw was 1.0 ug/L, the 2015 RBCtw (with dermal) is 0.12 ug/L, and the 2015 RBCtw modified to remove ingestion is 0.13 ug/L. The maximum deep groundwater concentration of 0.34 ug/L is below the 2012 RBC used in the revised assessment, but above the 2015 RBCs. DEQ is not requesting revisions to the Off-property HHRA. However, as part of the FS, effectiveness evaluations are expected to use the most recent risk information. DEQ recognizes that the new DEQ RBC spreadsheet was not available to use in the revised assessment (although as we noted in Comment 6, information on water dermal exposure from EPA was available).

12. Page 11, **Section 4.0 Identification and Evaluation of Constituents of Interest.** Dioxins were evaluated using a previous approach acceptable to DEQ. DEQ now applies acceptable risk levels to chemicals classes under a new policy. Dioxins, PCBs, and carcinogenic PAHs are considered chemical classes where the acceptable risk level for individual carcinogens of one-in-one-million applies to the total risk from all chemicals in each class. However, because the revised assessment was completed prior to DEQ's policy change, DEQ is not requiring the risk assessment be revised to address this issue. However, the FS will need to be completed using current DEQ policy.

13. **Page 15, 5.1.1 Excavation/Construction Worker.** Dieldrin exceeds the DEQ RBC of 2.2 μg/L in shallow groundwater for excavation and construction workers. Monitoring well PZ-1 was only sampled once with a detected concentration of 47.0 μg/L. Monitoring well ASW-04(18) has been sampled six times. Detected concentrations of dieldrin exceed the RBC in all six samples at ASW-04(18) with concentrations that range from 12.0 to 6.21 μg/L. Dieldrin must be identified as a COC for this pathway in the final Off-Property HHRA and carried into the FS.

14. **Page 15, 5.1.1 Excavation/Construction Worker.** 2,3,7,8-TCDD exceeds the DEQ RBC of 16 ng/L in shallow groundwater for excavation and construction workers. Monitoring well PM-01-018 has been sampled two times; both samples (66.5 ng/L and 99.3 ng/L 2,3,7,8-TCDD) exceed

the RBC screening level. 2,3,7,8-TCDD must be identified as a COC for this pathway in the final Off-Property HHRA and carried into the FS.

15. **Page 15, Section 5.1.2 Indoor/Outdoor Worker.** This section does not accurately describe the screening results. It appears that Table 8 presents the site-specific screening levels for the occupational outdoor air and vapor intrusion pathway. Table 12 appears to indicate that the following COIs exceed their respective screening level: dinoseb, MCPA, MCPP, aluminum, antimony, arsenic, boron, cobalt, copper, cyanide, iron, lead, manganese, molybdenum, nitrate, phosphorus, thallium, vanadium, 4,4'-DDD, 4,4'-DDT, endrin, endrin ketone, heptachlor epoxide, 2,4'-DDD, 2,4-dichlorophenol, 2-methyl-4,6-dinitrophenol, benz(a)anthracene, benzo(g,h,i)perylene, naphthalene, N-nitrosodimethylamine, pentachlorophenol, and total carcinogenic PAHs. Table 18 eliminates all of these based on volatility, except dinoseb, MCPA, MCPP and naphthalene. It is unclear why dinoseb, MCPA, and MCPP are not included in Table 22 or discussed in Section 5.1.2. Please revise all tables in this section to clarify the screening results.

16. **Page 15, Section 5.1.2 Indoor/Outdoor Worker**. N-Nitrosodimethylamine is shown to be volatile in Table B-1 but is excluded from further evaluation based on "non-volatile, no complete pathway". Table B-1 shows a Henry's Constant K_H of 1.8 E-06 m^3-atm/mol, less than the volatility limit of 1.0E-05 m^3-atm/mol and therefore meeting the definition of a volatile chemical. It appears that Table B-1 is incorrect. Please review and correct this error in the final Off-Property HHRA.

    DEQ's 2012 RBC spreadsheet used only Henry's Constant, and did not include vapor pressure in defining volatile compounds. DEQ's 2015 RBC spreadsheet has been updated to match EPA's definition of volatile compounds, which includes identifying chemicals with vapor pressures greater than 1 mm mercury as volatile. The vapor pressure of N-nitrosodimethylamine is 2.7 mm mercury (greater than 1 mm mercury), indicating that N-nitrosodimethylamine is volatile under DEQ's current volatility definition. Because the revised assessment was completed prior to DEQ's change in definition, DEQ is not requiring the risk assessment be revised to address this issue. However, the Off-Property HHRA must clearly explain what criteria are used to determine compounds that are volatile, and present an accurate screening of COIs.

    Also, please note that DEQ evaluated revised 2015 screening values for chemicals previously designated as non-volatile that would now be identified as volatile, including 1,4-dioxane, formaldehyde, heptachlor epoxide, isobutylalcohol, and N-nitrosodimethylamine. It appears that decisions made using 2012 RBCs are still valid.

17. **Page 15, Section 5.1.2 Indoor/Outdoor Worker.** A review of Table B-1 and DEQ's RBC tables show that dinoseb, MCPA, and MCPP are considered non-volatile and therefore, it appears that Table 18 is incorrect. The final Off-Property HHRA must present an accurate screening for the indoor/outdoor exposure scenario.

18. **Page 16, 5.2 ACG/CRBG Groundwater.** The revised assessment states that "Table 23 identifies those COIs selected based on the screening process outlined in Section 3.0." It is unclear what "selected" means. The final Off-Property HHRA must explain what "selected" means. COIs that fail RBC screening and are determined to be representative of site conditions must be carried into the FS as COCs.

19. **Page 17, Section 5.2 ACG/CRBG Groundwater.** Phosphorus was excluded because it was detected in one of two samples, which StarLink concluded indicates it was a data artifact and not

appropriate for evaluating risk. DEQ does not concur that a chemical detected in half of the wells sampled is an artifact. Phosphorus is also not discussed in Appendix C. Phosphorus must be identified as a COC for this pathway in the final Off-Property HHRA and carried into the FS.

20. **Page 18. Section 5.3 Soil.** Occupational workers need to be identified as a pathway and evaluated. Soil samples collected from shallow soil must be screened against RBCss values for occupational workers. A review of the of data presented in Table 14 indicate that arsenic, lead, dieldrin, PCBs, and 2,3,7,8-TCDD exceed occupational work RBCs. The final Off-Property HHRA must screen surface soil for the occupational worker pathway. DEQ's spreadsheet used to calculate RBCs for the other exposure scenarios will automatically calculate RBCss values to screen the occupational soil exposure scenario.

21. **Page 18. Section 5.3 Soil.** The detection frequency for PCBs and dioxins in one of three or one of five samples is not sufficient justification to screen out these chemicals for the excavation/construction worker pathway. PCBs and dioxins must be identified as COCs for this pathway and carried into the FS.

22. **Page 18, Section 5.3 Soil.** A minimum number of soil samples have been collected outside the property boundary. Sample extent/density in this area must be identified as a data gap for both surface soil and subsurface soil and be addressed in the FS work plan.

23. **Page 18, Section 5.3 Soil.** It is unclear from the text in this section how the observed RBC exceedances for the excavation worker and construction worker pathways will be addressed. The final Off-Property HHRA must clear identify that COIs exceeding RBCs will be carried into the FS. Also, conclusions must clearly explain what areas are represented by the screening. If representative sampling was not conducted in an area, then the sample extent/density for the area must be identified as a data gap and be addressed in the FS.

24. **Page 18, Section 5.4 Sediment**. It is unclear what areas of the Site are being addressed in this section. It appears this section is intended to address DEQ's Specific Comment 4 regarding areas where former Doane Lake sediments may be located within 15 feet of the ground surface. The final Off-Property HHRA must clearly explain what areas of the Site are being addressed for each screening evaluation.

25. **Page 18, Section 5.4 Sediment.** Only one soil sample from RP-26 at 35 to 37 feet bgs was evaluated in this section. The final Off-Property HHRA must also screen samples from East Doane Lake, as requested in our August 25, 2015 letter to StarLink.

26. **Page 20, Section 6.0 Uncertainty Analysis.** If there are no data for shallow soil, the use of a deeper sample as a surrogate is not necessarily conservative. The uncertainty analysis in the final Off-Property HHRA must be revised to reflect this.

27. **Page 21, Section 7.0 Summary and Next Steps.** It is unclear what the term "identified COIs for each media" is intended to convey. The final Off-Property HHRA must clearly identify all COCs that will be carried into the FS and identified in site remedial action objectives.

28. **Table 31. Summary of COIs by Media.** It is unclear what site-related contaminants are identified as COCs in the summary section. DEQ notes that all of the contaminants listed in the summary table exceed their respective RBCs. However, there are statements presented by Golder in Section 5, that many of the listed contaminants are detected infrequently and/or the detected concentrations are not attributable to the former Rhone-Poulenc facility. The final Off-Property

HHRA must clearly identify which contaminants are identified as COCs and will be carried into the FS.

29. **Figure 1. Off-Property Conceptual Site Model.** The conceptual site model must include a complete occupational worker exposure to surface soil (incidental ingestion, dermal, and inhalation) pathway with distinct pathways for the 0-15 feet bgs and 0-3 feet bgs soil depths.

    The trespasser exposure to soil pathway should be marked as complete, but can be footnoted to state that it is a conservative evaluation because it is based on occupational exposure.

30. **Figures 2, 3, and 4.** DEQ notes that several monitoring well and soil sample locations are described on these figures to be included at DEQ's request. Please revise these figures to illustrate sampling locations of site-related contamination without unnecessary and irrelevant description.

31. **Appendix C.** In Appendix C, the statement "detection limits were low enough to evaluate human health risks, and that adequate sampling has occurred." Appears to draw a conclusion that no additional sampling is needed and no data gaps exist within the off-property portion of the Site. As previously noted by DEQ, a data completeness evaluation was not included in the revised assessment to support this conclusion. The final Off-Property HHRA must include this evaluation to document that detection limits were low enough to evaluate human health risks, and that adequate sampling has occurred.

DEQ appreciates the work conducted by StarLink to prepare the submittal. The Off-Property HHRA must be revised consistent with DEQ's directed modifications and submitted to DEQ within 30 days. Please feel free to contact me at 503 229-6748 if you have any questions.

Sincerely,

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DEQ Northwest Region Cleanup Program

cc: Joan Underwood, Quantum Management Group
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